

What is claimed is:

1. A method comprising:

basing a discrete frequency transformation on the number of subcarriers in a predetermined set of subcarriers, one or more subcarriers of the set assigned to modulate data and the remaining subcarriers of the set not assigned to modulate the data;
performing the discrete frequency transformation on the data to modulate the data;
and
excluding from the transformation mathematical operations associated with the subcarriers not assigned to modulate the data.

2. The method of claim 1, wherein the excluding comprises:
excluding all of the subcarriers not assigned to modulate the data.

3. The method of claim 1, wherein the performing the discrete frequency transformation comprises:
performing orthogonal frequency division multiplexing modulation on the data.

4. The method of claim 1, wherein the performing comprises:
applying a weighting function during the discrete frequency transformation to perform symbol shaping.

5. The method of claim 1, wherein said one or more subcarriers are assigned to at least one of a user, an electrical device and a terminal.

6. The method of claim 1, further comprising:
using the modulated data to form an orthogonal frequency division multiplexing symbol.

1 7. The method of claim 1, further comprising:
2 using the transformation to generate symbols at a rate defined by a symbol generation
3 interval;
4 basing the discrete frequency transformation on the symbol generation interval; and
5 using the discrete frequency transformation to generate discrete modulated values for
6 an interval that exceeds the symbol generation interval to generate a cyclic extension.

1 8. The method of claim 7, further comprising:
2 transmitting each of the symbols during one of the intervals that exceeds the symbol
3 generation interval.

1 9. The method of claim 1, further comprising:
2 selectively pre-rotating phases of said one or more subcarriers to generate a cyclic
3 prefix.

1 10. The method of claim 1, wherein the mathematical operations comprise at least
2 one of an accumulate operation and a multiplication operation.

1 11. A system comprising:
2 a device to generate data to be modulated; and
3 a transmitter to:
4 base a discrete frequency transformation on the number of subcarriers in a
5 predetermined set of subcarriers, one or more subcarriers of the set of subcarriers assigned to
6 modulate data and the remaining subcarriers of the set not assigned to modulate the data;
7 perform the discrete frequency transformation on the data to modulate the
8 data; and
9 exclude from the transformation mathematical operations associated with the
10 subcarriers not assigned to modulate the data.

1 12. The system of claim 11, wherein the transmitter excludes all of the subcarriers
2 not assigned to modulate the data.

- 1 13. The system of claim 11, wherein the transmitter performs orthogonal
2 frequency division multiplexing modulation on the data.
- 1 14. The system of claim 11, wherein the transmitter determines components of the
2 discrete frequency transformation independently from each other.
- 1 15. The system of claim 11, wherein said one or more subcarriers are assigned to
2 one of a user, an electrical device and a terminal.
- 1 16. The system of claim 11, wherein the transmitter uses the modulated data to
2 form an orthogonal frequency division multiplexing symbol.
- 1 17. The system of claim 11, wherein the transmitter:
2 uses the transformation to generate symbols at a rate defined by a symbol generation
3 interval;
4 bases the discrete frequency transformation on the symbol generation interval; and
5 uses the discrete frequency transformation to generate discrete modulated values for
6 an interval that exceeds the symbol generation interval to generate a cyclic extension.
- 1 18. The system of claim 11, wherein the transmitter transmits each of the symbols
2 during one of the intervals that exceeds the symbol generation interval.
- 1 19. The system of claim 11, wherein the transmitter selectively pre-rotates phases
2 of said one or more subcarriers to generate a cyclic prefix.
- 1 20. The system of claim 11, wherein the mathematical operations comprise at
2 least one of an accumulate operation and a multiplication operation.

1 21. An article comprising a storage medium readable by a processor-based system,
2 the storage medium storing instructions to cause a processor to:
3 base a discrete frequency transformation on the number of subcarriers in a
4 predetermined set of subcarriers, one or more subcarriers of the set assigned to modulate data
5 and the remaining subcarriers not assigned to modulate the data;
6 perform the discrete frequency transformation on the data to modulate the data; and
7 exclude from the transformation mathematical operations associated with the
8 subcarriers not assigned to modulate the data.

1 22. The article of claim 21, the storage medium storing instructions to cause the
2 processor to exclude from the transformation all mathematical operations associated with the
3 subcarriers not assigned to modulate the data.

1 23. The article of claim 21, the storage medium storing instructions to cause the
2 processor to perform orthogonal frequency division multiplexing modulation on the data.

1 24. The article of claim 21, the storage medium storing instructions to cause the
2 processor to determine components of the inverse discrete frequency transformation
3 independently from each other.

1 25. The article of claim 21, wherein said one or more subcarriers are assigned to
2 one of a user, an electrical device and a terminal.

1 26. The article of claim 21, the storage medium storing instructions to cause the
2 processor to use the modulated data to form an orthogonal frequency division multiplexing
3 symbol.

1 27. The article of claim 21, the storage medium storing instructions to cause the
2 processor to:
3 use the transformation to generate symbols at a rate defined by a symbol generation
4 interval;
5 base the discrete frequency transformation on the symbol generation interval; and
6 use the discrete frequency transformation to generate discrete modulated values for an
7 interval that exceeds the symbol generation interval to generate a cyclic extension.

1 28. The article of claim 27, the storage medium storing instructions to cause the
2 processor to:
3 transmit each of the symbols during one of the intervals that exceeds the symbol
4 generation interval.

1 29. The article of claim 21, the storage medium storing instructions to cause the
2 processor to:
3 selectively pre-rotate phases of said one or more subcarriers to generate a cyclic
4 prefix.

1 30. The article of claim 21, wherein the mathematical operations comprise at least
2 one of an accumulate operation and a multiplication operation.